The Diploma in Primary Emergency Care (DipPEC) – a survey of its graduates, their perceptions & subsequent trends

by

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Declaration

The work in this assignment has been composed by Dr David Allan Cloete. It has not been submitted for any other degree or professional qualification.

I have read and understood the guidelines on plagiarism as delineated by Emergency Medicine Cape Town and declare that this written dissertation is all my own work, except where I indicate otherwise by proper use of quotes and references.

Signature:

Date:

25-July-2019

TABLE OF CONTENTS

Abbreviations

CMSA – Colleges of Medicine of South Africa

DipPEC – Diploma in primary emergency care

EM – Emergency medicine

EMSSA – Emergency Medicine Society of South Africa

HCW - Health care worker

H Dip Emerg Med - Higher Diploma in Emergency Medicine

HPCSA - Health Professions Council of South Africa

HREC - Health Research Ethics Committee

FCEM - Fellowship of the College of Emergency Medicine of South Africa

IFEM – International Federation for Emergency Medicine

MMED – Master of Medicine

MPhil – Master of Philosophy

MSc – Master of Science

SA – South Africa

SUN – University of Stellenbosch

UCT – University of Cape Town

UK – United Kingdom

UKZN – University of Kwazulu Natal

UP – University of Pretoria

U.S. – United States

WITS – University of the Witwatersrand

WHO – World Health Organization

Part A: Literature Review

INTRODUCTION

Even though emergency medical care is a basic human right in South Africa (SA), recognition of Emergency Medicine (EM) as a speciality is fairly new.[1]

EM itself, is a specialty dedicated to the diagnosis and treatment of unforeseen illness and injury. It includes the initial evaluation, diagnosis, treatment, coordination of care among multiple providers, and disposition of any patient requiring expeditious medical, surgical or psychiatric care. It is not defined by location, and is practised in a variety of pre-hospital and in-hospital settings.

The need for the development of safe, evidence-based medical specialties in any country is paramount: the economic, biomedical and biopsychosocial benefits are closely related and well-recognized. In terms of EM progression in developing countries in particular, this is even more so, with South Africa being a prime example.

South African trained doctors range from those practising at a general level, to those who have specialised further in a particular discipline - either of which might elect to practise domestically or abroad.

LITERATURE REVIEWED

The objectives of the literature review are:

- To define the role of EM in South Africa and its origins.
- To review what formal qualifications are available to develop one's EM career further in SA.
- To discuss why health professionals elect to study further.
- To define 'brain drain' and how it applies to SA.

Search Strategy

The online Stellenbosch University library was utilised using the search terms "Emergency Medicine AND South Africa", "Brain drain AND South Africa". The search was restricted to articles only.

The PubMed electronic database was searched using the same search terms. No restrictions were applied.

The CMSA's website was used and the webpage specific to the College of Emergency Medicine utilised. In addition, the Transactions Journal of the CMSA, which lists graduates of all qualifications and across all disciplines from 2012-2018, was accessed.

A further search was conducted using the search engine Google, using the search terms "specialising in emergency medicine South Africa"; "Emergency Medicine South Africa", "brain drain South Africa", "Medical brain drain South Africa", "Importance of higher education".

HISTORY OF EMERGENCY MEDICINE IN SOUTH AFRICA

EM has long been practiced in many forms and to a high standard across SA. The development of the first formal EM structures were driven by the success of the Trauma Society of South Africa, where motivated individuals formed the Emergency Medicine Society of South Africa (EMSSA) in the late 1990s. [2]

This society applied for and received affiliate membership to the International Federation for Emergency Medicine (IFEM) in 2001, receiving official recognition as a speciality in 2003.[3] The College of Emergency Medicine of South Africa was formed at the same time. The first FCEM (SA) (Fellowship of the College of Emergency Medicine of South Africa) specialist qualification was awarded in 2007.

Subsequently, EM has continued to grow steadily: in 2008, there were only 30 specialists in the country [2]; between 2007 and 2010 there were the same number of specialists graduating from the combined University of Cape Town and University of Stellenbosch (UCT/SUN) EM program alone[4] and during the course of last year (2017) a further 14 specialists were added to the graduate registry.[6] Currently, 5 universities in the country offer specialist training programs in the field.

Internationally, soon after the turn of the century, the demonstrated success of EM in nations where emergency medical services were more mature (such as the United States (U.S),

United Kingdom (UK), Canada, Australia, Singapore and Hong Kong), led the public in many other countries to expect better emergency medical care. In 2008, it was acknowledged how a rapidly increasing number of countries globally were developing their capacities to respond to acute illness and injury, and organising their own EM training programs.[8,,9]

Health care in SA, is comprised of the public health care sector, as well as a private health care sector. It varies from the most basic primary health care, offered free by the state, to highly specialised, hi-tech health services available in both these sectors.

However, the public sector is stretched and under-resourced in places. While the state contributes about 40% of all expenditure on health, the public health sector is under pressure to deliver services to about 80% of the population. The vast majority of peripheral clinics and primary health care facilities – which drain to secondary level and ultimately tertiary level facilities - are manned by nurses and/or junior intern doctors, who are often tasked with immense workloads.[2,10]

Disease burdens and the number of related emergent presentations to South African medical facilities are tremendous. South Africa ranks amongst the highest in the world in terms of trauma and violence, with approximately 66 trauma presentations per 1000 population.[11] Approximately one third of admissions to emergency centres in SA are due to injuries – a staggering figure when compared to first world nations like the U.S. (12%) and UK (8%).[12]

Medical emergencies are also prevalent, and include conditions both resulting from urbanisation (cardiovascular illnesses; malignancies; etc.) as well as the synergistic diseases of tuberculosis and HIV – South Africa has the highest prevalence of HIV/AIDS in the world.[3,13] Furthermore, high levels of unemployment and poverty augment such disease burdens.

Naturally, the exposure to medical, trauma-related and paediatric emergencies for health professionals is both diverse and significant. It is not surprising that practitioners from all corners of the globe visit this developing nation electively. They do so not only to gain further knowledge and expertise in EM, but often to be introduced to challenging, emergent, diverse and unique clinical cases for the first time.[2,14-16]

South Africa indeed prides itself in the training and practice of EM, as well as the associated research in this fundamental field. South African EM continues to grow and be recognized both locally and internationally. October 2007 saw *Emergency Medicine in the Developing World*, a conference held in Cape Town comprising 4 days and hosting 650 delegates from 42 countries. 9 years later the International Conference on Emergency Medicine (ICEM 2016) was also held in Cape Town, and hosted some 1950 delegates from more than 50 countries.[17]

EM TRAINING IN SA

In South Africa, the Health Professions Council of South Africa(HPCSA) recognizes 30 specialties and 18 subspecialties. The Colleges of Medicine of South Africa (CMSA), primarily an examining body for medical disciplines, has 26 colleges that offer some 91 examinations.

Should doctors in South Africa wish to advance themselves further, they have a wide range of possible choices in most specialties available to them. Often, in a particular chosen discipline, they may choose (given that he/she meets the required criteria) from a spectrum of different qualifications offered by the CMSA, ranging from diplomas and higher diplomas, to fellowships (the national standardised assessment for specialties) and subspecialty certificates.

The EM training options available to doctors are as follows:[2,4]

1. *Short courses* – these are offered countrywide; the majority of which are internationally recognized (e.g. Advanced Trauma Life Support; Advanced Cardiovascular Life Support; etc.) and are valid for 3-4 years. Whilst not offered by the CMSA *per se*, they are required to enter many of the other options described below.
2. *Specialist physician training* – Fellowship of the College of Emergency Medicine of South Africa (FCEM):
   This consists of two components, the second of which can only be written after: a Master of Medicine (MMED) research component has been completed, at least 36

months has been spent in a registered training post and a critical performance portfolio has been approved.

This is offered by the Universities of: Cape Town (UCT), Kwazulu-Natal (UKZN), Pretoria (UP), Stellenbosch (US), and the Witwatersrand (WITS).

3. *Non-specialist registerable training:*
    a. *Diploma in Primary Emergency Care* [DipPEC(SA)] – see later.
    b. *Higher Diploma in Emergency Medicine* (H Dip Emerg Med)

    This is available to individuals who have completed the DipPEC or equivalent within two years of attempting this examination. They must have completed several advanced life support courses; be an accredited instructor in at least one of these; and must also be accredited in level one ultrasound.

    c. Master degrees in EM:

        i. Master of Philosophy (MPhil)

        This qualification is offered at UCT as a combination of coursework and a minor dissertation and aims to develop understanding of the principles of research methodology, clinical epidemiology and biostatistics. Students may choose from 4 different streams: clinical emergency care, African emergency care, patient safety or disaster medicine.

        ii. Master of Science (MSc) in Emergency Medicine:

        This degree consists of course work, exams and a research report all of which are to be completed between 2-5 years. The goal of the MSc in Emergency Medicine is to offer post-graduate academic in-depth investigation, exploration and research in both out-of-hospital and in-hospital EM. It is offered by the University of the Witwatersrand (WITS). The University of Cape Town offers a research only MSc.

    d. Doctor of Philosophy (PhD):

    This is a research degree and is completed by substantial dissertation only. Candidates are required to undertake an advanced, approved research project under the guidance of a supervisor. It is offered by UCT, SUN and WITS.

The DipPEC was the first non-specialist EM training course in SA and for a long time the only postgraduate training available in the country – it was transferred from the College of Family Practitioners to the College of Emergency Medicine in 2004.[2]

The CMSA itself, recognises that in many areas in SA, patients have no access to doctors with emergency medicine expertise, and that there is an urgent need to train practitioners and raise the standard of practice of emergency care.[18] The DipPEC aims to increase the emergency medicine capacity/competence of health practitioners and to improve patient and community care for those presenting with common emergencies encountered in district Hospitals and private practice – thereby indirectly achieving the CMSA's goal.

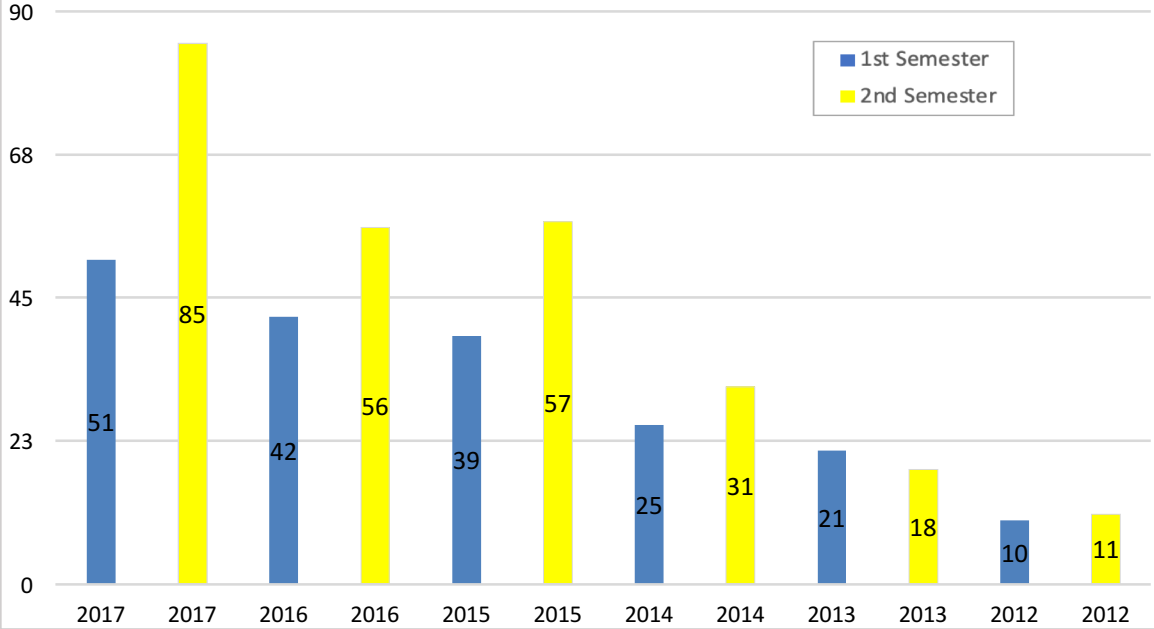
The examination is aimed at non-specialists, and the standard required is the level of competence equivalent to that of a generalist working at a district hospital. The regulations for the examination pertinently state that emergency medical care affects all systems and all disciplines – as such, the syllabus is broad and includes emergencies pertaining to all specialties and age groups; as well as associated clinical and practical skills.

Admission to the examination requires candidates to be registered/registerable with the HPCSA as a medical practitioner and possess a valid Basic Life Support Certificate. In terms of the basic qualification required, the candidate must have completed his/her internship as well as 6 months at an emergency centre accredited by the CMSA; or completed the 2 year internship program and a further 2 months supervised training at an accredited facility; or demonstrated evidence of an active interest in EM by submitting a comprehensive portfolio of learning.[18]

There are currently 11 diplomas offered by the CMSA. The DipPEC is currently the largest diploma with a clinical component. In terms of popularity, it has outstripped the diplomas in Anaesthetics and Child Health, and is surpassed in numbers only by the diploma in HIV Management – a written only diploma.[19]

The popularity of the DipPEC has increased exponentially in recent years, with 21 successful candidates obtaining this degree in 2012, compared to 136 successful candidates in 2017 (Figure 1).[19]

Figure 1: Number of successful DipPEC candidates per semester: 2012-17



MOTIVATION FOR LEARNING

Obtaining a further qualification and advancing one's knowledge as an adult comes with its own motivations – this applies to all disciplines, medical and non-medical.

Generally, individuals who graduate with a higher education typically have more employment opportunities and possess higher earning potential[20]. However, monetary gain is not the only perceived benefit nor sole reason for developing one's skill set – others include: personal development, community involvement, greater sense of discipline, better communication, exposure to more employment or research opportunities, obtaining accreditation, sense of accomplishment and the realization of one's passions.[21,22]

In fact, participation in adult learning has positive effects on a wide spectrum of social outcomes, as well as those that are directly health related: it appears furthering education positively impacts various aspects of cognitive ability in late midlife.[23]

There is a paucity of literature pertaining to the perspectives and motivations of health professionals in this regard, suffice to say many of the above stated reasons can be extrapolated to the medical field. In recent years, medical practitioners globally have shown a strong tendency toward specialisation,[24,25] and there are indeed inequities between general practitioners and specialists in terms of remuneration, lifestyle, and prestige.[26]

Once SA doctors have graduated from their respective universities, and domestically completed their three compulsory years (2 internship years; 1 community service year), they are then eligible for registration as independent medical practitioners by the HPCSA. They may then elect to specialise and work towards entering a registrar (specialist) program; work in a particular (or variety of) field(s) to gain more experience; travel overseas either to holiday or in a working capacity; take a break from their careers; or they may choose to work as general practitioners in SA. Practitioners may wish to obtain a further advanced qualification(s) such as a diploma, without the desire to specialise, or use such a degree to assist in applying for training posts/registrarships or employment applications – both domestic and foreign.

In the realm of Emergency Medicine, similarly to other specialties, the more advanced one's level of expertise or accreditation, the higher one's salary.[27] Interestingly, different parts of the world contrast significantly in terms of the salaries earned by emergency physicians - the average annual income for those working in the U.S. is more than $281 000, whereas those working in SA earn $120 731. Significantly higher salaries (when compared to SA) are also present in the UK, Australia and Canada.[27]

ATTRITION AND BRAIN DRAIN IN SA

South Africa is a nation known with a rich, yet tumultuous history. Even though this beautiful and unique country draws the most visitors yearly when compared to the rest of the African continent; and boasts multiple, diverse tourist attractions that collectively contribute to 9% of the gross domestic product[28]; brain drain of domestic, skilled professionals is a serious concern.

Brain drain can be defined as the process in which a country loses its most educated and talented workers to other countries through migration, for better pay or living conditions.[30] In doing so, such individuals contribute to the economy and expertise of other countries, which potentially negatively impacts their country of origin, compounded by the fact that those who remain don't have the 'ability' to make a difference. This migration process has indeed been a cause for global concern, particularly on the African continent where high disease burdens and already fragile health systems exist.[30]

With regard to skilled health care workers (HCWs) in South Africa, brain drain, or physician attrition, is an unfortunate reality, affecting the majority of skilled health professional categories (physicians, nurses, dentists and pharmacists) – Australia, Canada, U.S. and the UK are the most popular destinations.

The literature is conflicting when reviewing rates of HCW migration and it is important to note that the South African Government does not collect specific records of such migration – estimates are commonly based on information from licensing bodies and immigration records. As such, these estimates could be understated.[31]

Alarmingly, SA was ranked 8th out of 10 top-ranked countries for emigrating physicians in 2000.[32] More recent studies, however, indicate a decreasing trend of HCW migration in the last 18 years, and postulate that this is due to domestic policy changes, notably the occupation specific dispensation where increased remuneration was utilised by the government to attract and retain HCWs.[33] In addition, it is regarded that immigration to several popular 'destination' countries, such as the UK, has slowed since the introduction of examinations to enter these countries.[34]

This correlates with two studies that surveyed surgeon migration from SA – one study reviewed surgeons qualifying from UCT between 1992 and 2011, and noted 13% had left the country; another study conducted by UKZN between 2008 and 2013 noted that all graduate surgeons remained in South Africa. There is no data with respect to South African EM physicians.[35]

A study in 2010, involving a questionnaire distributed to final year students of all South African medical schools in 2007 and 2008, indicated that although more than half (55%) of the South African nationals planned to work aboard, the majority (73%) planned to do so for only a short period, with only 7% wishing to relocate permanently. This was in stark contrast to a study conducted in 1991, that indicated 54% of medical students at UCT were considering emigration.[36,37]

In comparison, between 2005 and 2015, there was noted to be an increase in the number of African-educated physicians immigrating to the US specifically – the majority of this statistic comprised HCWs from South Africa, Nigeria, Egypt and Ghana.[38]

This highlights the double jeopardy that exists in Sub-Saharan Africa: in these resource limited settings, there is an unfortunate, severe imbalance between the greater number of acutely ill patients, and the paucity of HCWs available to care for them. Stated differently, Africa is the region with the largest HCW shortages in the World.[39]

Traditionally, causes of brain drain can be divided into 'push' and 'pull' factors, referring to the negative characteristics of the home country that form the impetus for migration, and the positive characteristics of the destination country from which the migrant would like to benefit.[30,40]

In terms of HCW migration from South Africa, several studies have reviewed these two driving forces. One paper reviewing physician migration to Australia noted that 'push' factors were the predominant driving force – in particular, violent crime, safety, childrens' futures, political situations and professional development. Interestingly, 'economic betterment' was selected far less frequently when compared to the primary reasons for emigration already mentioned.[41]

Other studies echo these reasons, but also include poor living and working conditions, high cost of living, job and economic security and the high burden of HIV and MDR-TB. In terms of 'pull' factors to destination countries, those listed most commonly, and which closely resemble their 'push' counterparts, include promise of safety and security for the family, availability of positions, and better living and working conditions.[33, 42-46]

In terms of 'pull' factors to destination countries, those listed most commonly, and which are closely linked to their 'push' counterparts, include promise of safety and security for the family, higher remuneration, availability of positions and better living and working conditions.[42,46,48] Active recruitment by destination countries combines both driving factors.[49,50]

Even though the literature demonstrates conflicting results regarding HCW migration from SA, HCWs across all categories do continue to migrate and potential remedies such as international workforce policies, international medical organisations' codes of conduct and inter-country collaborations are continually being reviewed.[51-53] One fairly recent article (2015), noted that the percentage of physicians and other HCWs seeking migration information from professional sources, recruitment agencies and personal contacts is significant; and more importantly, the percentage of physicians in the same study 'very likely' to migrate from SA by 2020 was also high. Frighteningly, when the numbers of those who responded 'somewhat likely' are added to this figure, it indicates more than half of all South African doctors participating in the study will have sought work abroad by that time (~208 generalists; ~324 specialists).[33] This is even more concerning, when projections for 2030 indicate that the demand for HCWs in SA and other upper middle-income countries would have risen considerably.[54]

SA is listed as one of the 46 countries in Sub-Saharan Africa with a density of physicians *below* critical threshold required to deliver basic health services,[55,56] as stipulated by the WHO – 0.767, compared to the required 2.88 physicians per 1000 people.[57] It is pertinent to mention, that even with no external migration, Africa as a whole would still lack the capacity to meet the demand for HCWs, let alone the World Health Organization's (WHO) minimum standards of quality of care. In other words, whilst emigration of doctors imposes huge costs (both human and financial) for their countries of origin, its reduction would not be enough to redress the African human resource crisis.[58]

It is clear that physician attrition, particularly from the African continent with SA *not* being the exception, must be recognised as a distressing reality. It indirectly impoverishes a country, and as such it needs to be emphasised that South African physicians are invaluable commodities.

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Part B: Proposal

The Diploma in Primary Emergency Care: A description of its candidates & their motivation over the last 6 years

Principal Investigator: Dr DA Cloete

Supervisors: Dr H Geduld, Dr W Jooste, Dr A Parker

INTRODUCTION

Background

Emergency medical care is a basic human right in South Africa (SA) and emergency medicine (EM) is a fairly, newly recognized specialty in the country.[1] It was first registered as a specialty in SA in 2003, and continues to grow with 5 Universities offering specialist training programs in this field.[2]

EM training in South Africa takes many different forms - some of it by the different universities, some of it by the College of Emergency Medicine of the College of Medicine of South Africa (CMSA) and some by accredited short course providers.

The advanced level of EM training in SA parallels that offered by the best in the world, and this exposure is unsurprisingly sought by foreign graduates.[3,4] In terms of training in EM in SA, the spectrum is fairly diverse. (see APPENDIX 1: Emergency Medicine Training Options in SA).[2,5]

The DipPEC was the first non-specialist EM training course in SA and for a long time the only postgraduate training available in the country – it was transferred from the College of Family Practitioners to the College of Emergency Medicine in 2004.[5]

The DipPEC aims to increase the emergency medicine capacity/competence of health practitioners and to improve patient and community care for those presenting with common emergencies encountered in district Hospitals and private practice. The examination is aimed at non-specialists, and the standard required is the level of competence equivalent to that of a generalist working at a district hospital.

The regulations for the examination pertinently state that emergency medical care affects all systems and all disciplines – as such, the syllabus is broad and includes emergencies pertaining to all specialties and age groups; as well as associated clinical and practical skills.

Admission to the examination requires candidates to be registered/registerable with the Health Professions Council of South Africa (HPCSA) as a medical practitioner and possess a valid Basic Life Support Certificate. In terms of the basic qualification required, the candidate must have completed his/her internship as well as 6 months at an emergency centre accredited by

the CMSA; or completed the 2 year internship program and further 2 months supervised training at an accredited facility; or demonstrated evidence of an active interest in EM by submitting a comprehensive portfolio of learning.[6]

There are currently 11 diplomas offered by the CMSA. The DipPEC is currently the largest diploma with a clinical component. In terms of popularity, it has outstripped the diplomas in Anaesthetics and Child Health, and is surpassed in numbers only by the diploma in HIV Management – a written only diploma. [7]

Motivation

The CMSA recognises that in many areas in SA, patients have no access to doctors with emergency medicine expertise, and that there is an urgent need to train practitioners and raise the standard of practice of emergency care.[6] As an examination, the DipPEC aims to comprehensively prepare non-specialist practitioners and indirectly achieve this goal.

It is not known who applies for this examination, their reasons for doing so, what training they received prior to sitting the examination and if or how the DipPEC influenced their future career paths.

The information gathered though this study could potentially be used by the College to project future candidate numbers in order to appropriately create capacity for the examination process.

Furthermore, understanding of candidates' motivation and use of the diploma, may be used to realign the stated aims and objectives of the qualification. In addition, candidates' views regarding their undergraduate as well as their early postgraduate emergency medicine training (during their compulsory three years as interns and community service officers) could be analyzed and publicized to relevant institutions; and similarly, answers to the survey will allow indirect assessment and better understanding of the needs for emergency medicine training in SA.

Aim

To describe the population of health practitioners who have completed the DipPEC, in order to understand the current role of this examination in the SA health care setting.

Objectives

i. To quantify the number of health professionals successfully completing the DipPEC since 2011.
ii. To obtain specific demographics of candidates who have completed the DipPEC.
iii. To describe the perceived professional benefits from completing the DipPEC.
iv. To describe candidates' motivations for entering the DipPEC.

METHODOLOGY

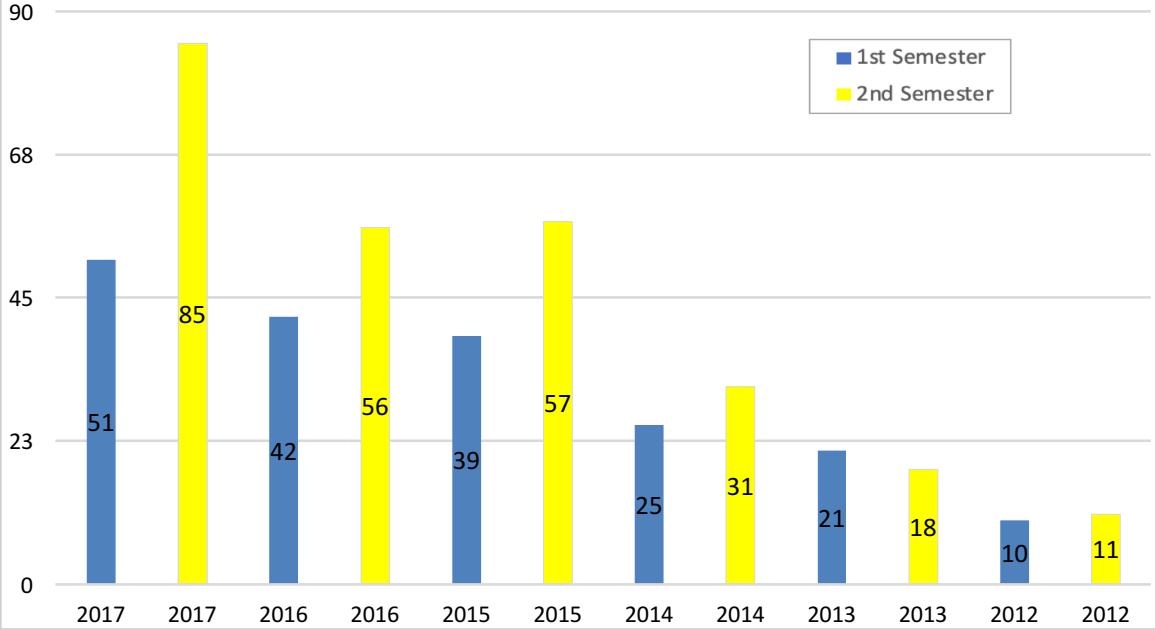
Study Design

An e-survey will be utilised that generates quantitative data. This will be designed using SurveyMonkey® Survey Monkey Inc., San Mateo California USA; www.surveymonkey.com).

The questions will focus on the demographics of the candidates (age, gender, current discipline and rank), emergency medicine training they have received both formally and informally to date; their current and future career plans and their views on the DipPEC itself.

The last 6 years' candidates will be approached to complete the e-survey – this time period has been selected due to the marked increase in practitioners successfully completing the DipPEC in recent years (please see Figure 1).[7] The data used to generate this graph is freely available online via the CMSA website where the names of successful candidates are displayed.

Figure 1: Number of successful DipPEC candidates per semester: 2012-17



Data Collection

Once approval has been granted by the CMSA, the CMSA examination office will be asked to distribute the survey to DipPEC candidates from 2012-2017. Two weekly follow-up emails will be sent, should the initial attempts for responses be unsuccessful – this will be done on three occasions, should the initial yield be less than 30% expected (see below). Should the proposed study population number be unsatisfactory following three email attempts, then phone call contact may be considered.

Data Analysis

Our population is estimated to be around 450. We expect an attrition rate of around 30% due to loss to follow-up and incorrect email addresses. Of the remaining 315 individuals, we would aim for a 50% response rate (~160).

The quantitative data collected will then be evaluated and trends identified. Simple descriptive statistics will be used to analyse the data. Demographic categories may be used to evaluate subsets of data and free text comments will be categorized by theme – these will then be further scrutinized and allow for pertinent conclusions to be drawn.

Time Schedule

The study will commence immediately following approval from the Stellenbosch University Health Research Ethics Committee (HREC).

Task	Proposed Duration & Date Schedule
Data Collection	5 months; February 2018 – June 2018
Data Analysis	3months; July 2018 – September 2018
Writing	2 months; October 2018-November 2018
Preparation & Submission for Publication	1 month; December 2018

ETHICAL AND LEGAL CONSIDERATIONS

Informed consent will be obtained from each candidate before they are able to proceed with the e-survey.

Primarily, the study will need to ensure anonymity for the previous DipPEC candidates willing to participate in the survey – their answers will generate completely anonymised data. Their privacy will be respected and maintained at all times. Only the principle investigator will have access to the anonymised data and no participants will be prejudiced.

All candidates who entered the exam will be included and no questions pertaining to the outcome of the exam will be asked. Finally, the CMSA, the College of Emergency Medicine South Africa and the DipPEC examination itself will be maintained in a neutral light. Approval to conduct this study will be obtained from CMSA and HREC.

BUDGET

No funding is required for this research project.

LIMITATIONS

Selection bias is likely as candidates that respond may value the College of Emergency Medicine South Africa more than those who fail to respond. The format and components of the online questionnaire are unlikely to result in any recall bias.

REPORTING AND IMPLEMENTATION OF RESULTS

The data will be used to write an article that will be published in a south African peer reviewed journal. A report will also be sent to the college of emergency medicine and the CMSA. Findings of the study might assist the College of Emergency Medicine South Africa in planning future examinations and might identify training needs of potential DipPEC candidates. In addition, the data will allow for conclusions to be drawn as to why clinicians enter the DipPEC, as well as potential needs for EM training both at an undergraduate level and during a health professional's internship and community service years.

Lastly, this research will help identify the value of the DipPEC examination which, in turn, will provide the College of Emergency Medicine South Africa and DipPEC committee with beneficial insight as to current and future candidates.

APPENDICES

APPENDIX 1: Emergency Medicine Training Options in SA

1. *Short courses* – these are offered countrywide; the majority of which are internationally recognized (e.g. Advanced Trauma Life Support; Advanced Cardiovascular Life Support' etc.) and are valid for 3-4 years.

2. *Specialist physician training – Fellowship of the College of Emergency Medicine of South Africa (FCEM):*
   This consists of two examinations, the second of which can only be written once: a Master of Medicine (MMED) degree has been completed, 36 months have been spent in a registered training post and a critical performance portfolio has been approved.
   This is offered by the Universities of: Cape Town (UCT), Kwazulu-Natal (UKZN), Pretoria (UP), Stellenbosch (US), and the Witwatersrand (WITS).

3. *Non-specialist registerable training:*
   a. *Diploma in Primary Emergency Care [DipPEC(SA)] – refer to text.*
   b. *Higher Diploma in Emergency Medicine (H Dip Emerg Med)*
      This is available to individuals who have completed the DipPEC or equivalent within two years of attempting this examination. They must have completed several advanced life support courses; be an accredited instructor in at least one of these; and must also be accredited in level one ultrasound.

c. *Master degrees in EM:*

   i. *Master of Philosophy (MPhil)*

   This is offered as a combination of coursework and a minor dissertation and aims to develop understanding of the principles of research methodology, clinical epidemiology and biostatistics. Students may choose from 4 different streams: clinical emergency care, African emergency care, patient safety or disaster medicine.

   ii. *Masters of Science (MSc) in Emergency Medicine:*

   This degree consists of course work, exams and a research report all of which are to be completed between 2-5 The goal of the MSc in Emergency Medicine is to offer post-graduate academic in-depth investigation, exploration and research in both out-of-hospital and in-hospital EM. It is offered by the Universities of Cape Town (UCT) and the Witwatersrand (WITS).

d. *Doctor of Philosophy (PhD):*

   This is a research degree and is completed by substantial dissertation only. Candidates are required to undertake an advanced, approved research project under the guidance of a supervisor. It is offered by UCT, US and WITS.

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Part C: Manuscript in Article Format

(South African Medical Journal)

ABSTRACT

THE DIPLOMA IN PRIMARY EMERGENCY CARE (DIPPEC): A DESCRIPTION OF ITS GRADUATES AND THEIR MOTIVATION OVER A 6 YEAR PERIOD

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Background: Emergency Medicine (EM) is a relatively young specialty in South Africa (SA). The Diploma in Primary Emergency Care (DipPEC), from the Colleges of Medicine of South Africa (CMSA), aims to prepare non-specialist physicians in managing urgent and emergent patients, thereby indirectly elevating the practice of emergency care in SA. Over the last 6 years the popularity of this diploma has increased dramatically. It is not known who applies for the DipPEC, why they applied, what training they received prior to entry or how the qualification has influenced their career paths.

Objectives: To quantify and describe the demographics of DipPEC graduates, including their motivations and perceived benefits regarding the qualification, in order to understand the current role in the SA health care setting. Secondary aims included reviewing graduates' perceptions of EM training both at an undergraduate and postgraduate level; as well as providing the CMSA with insight for future planning.

Methods: Following ethical approval from Stellenbosch University and the CMSA, an e-survey was distributed to the DipPEC graduates from 2012-2017. The quantitative and qualitative data collected, were analysed with simple descriptive statistics and scrutinized for common themes. The CMSA Transactions publication was used to collate numbers of graduates from 2012-2017.

Results: 293 responses out of 526 graduates were received. Annual graduate numbers increased from 28 in 2012 to 133 in 2017. 89% of participants were less than 35 years of age and 81% obtained the DipPEC within 5 years of completing their internship. 80% spent 6 months in an EC during their community service year to qualify to sit the examination. 76% of

graduates felt their undergraduate training prepared them inadequately to treat emergent patients and 72% sat the DipPEC primarily to improve their EM knowledge.

Conclusion: The DipPEC has dramatically increased in popularity, and comes highly recommended by its graduates. The main driving force behind sitting the examination is to increase EM knowledge, and there appears to be an overt dissatisfaction by many health professionals with the EM training received at a junior level.

INTRODUCTION

Emergency medical care is a basic human right in South Africa (SA)[1] and emergency medicine (EM) is a fairly new, recently recognised specialty in the country, being registered in 2003[2]. The discipline continues to grow in SA and the advanced level of EM training parallels that offered by higher income countries [3,4] The spectrum of the training itself is fairly diverse ranging from accredited short courses, to diplomas, masters degrees and specialist physician training. The diploma in primary emergency care (DipPEC), which for a long time was the only postgraduate training available in the country, [5] is currently the largest diploma with a clinical component offered by the Colleges of Medicine of South Africa (CMSA). In terms of popularity, it is only surpassed by the diploma in HIV management (a written only diploma), and in recent years its popularity has increased dramatically[6] – from 21 graduates in 2012, to 136 graduates in 2017.

The CMSA recognises that in many areas of SA, access to doctors with EM expertise is lacking and there is an urgent need for such training, in order to raise the standard of practice of emergency care. [7] The DipPEC aims to indirectly achieve this goal by encouraging education of non-specialist physicians.

It is not known who applies for the DipPEC, why they applied and what training they received prior to sitting the examination. Similarly, how the diploma has influenced their future career paths is unknown.

This study aimed primarily to quantify and describe the characteristics of DipPEC graduates, including their motivations and perceived benefits regarding the qualification, in order to understand the current role of this examination in the SA health care setting. Secondary aims included reviewing graduates' perceptions of EM training at both undergraduate and postgraduate level; as well as providing the CMSA with insight into features of the diploma itself (stated aims, objectives, etc.) for future planning.

METHODS

An e-survey was designed using SurveyMonkey ® (Survey Monkey Inc., San Mateo California USA; www.surveymonkey.com) and included open-ended questions to describe motivations (See APPENDIX 1: Survey Distributed to DipPEC graduates).

Permission was granted by the CMSA and ethical approval obtained from the Stellenbosch University Health Research Ethics Committee, for email distribution of the survey to the DipPEC graduates from the last 6 years. The survey was distributed electronically via the CMSA, and three requests for online survey completion were made, each spaced three weeks apart. Electronically-obtained, informed consent from each potential participant was required before they could proceed with the e-survey and this was included in the same email invitation. The survey could only be completed once per participant.

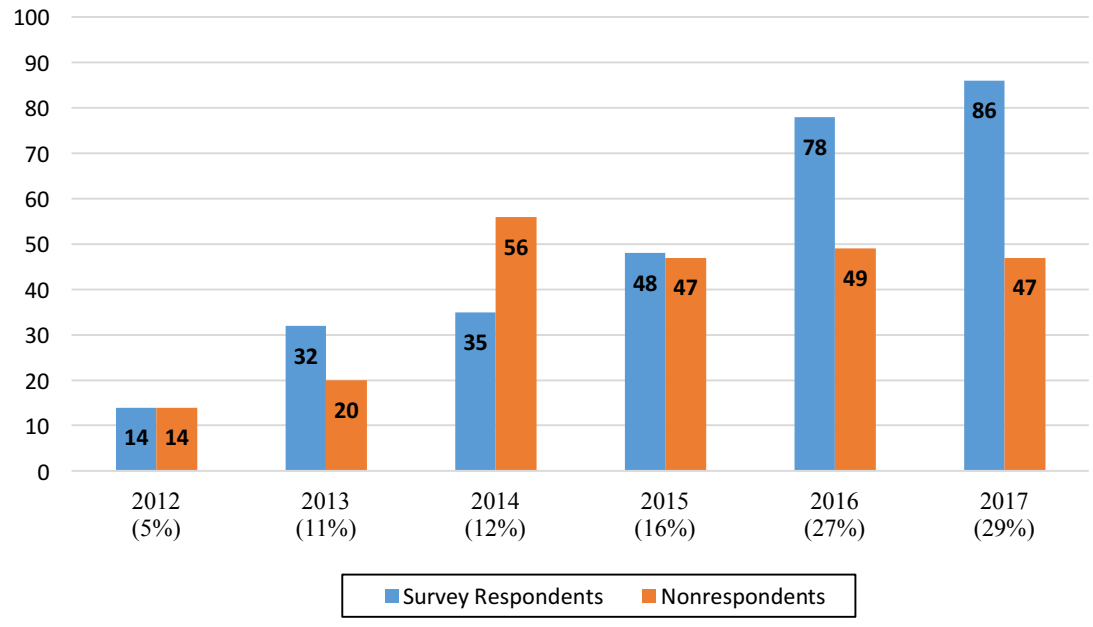
The 27 survey questions focused on: the demographics of the candidates; their past formal as well as informal EM training; their current and future career plans and their views on the DipPEC itself.

Quantitative data collected was then evaluated and trends identified, with simple descriptive statistics used to analyse the data. Free text comments were reviewed for common themes.

RESULTS

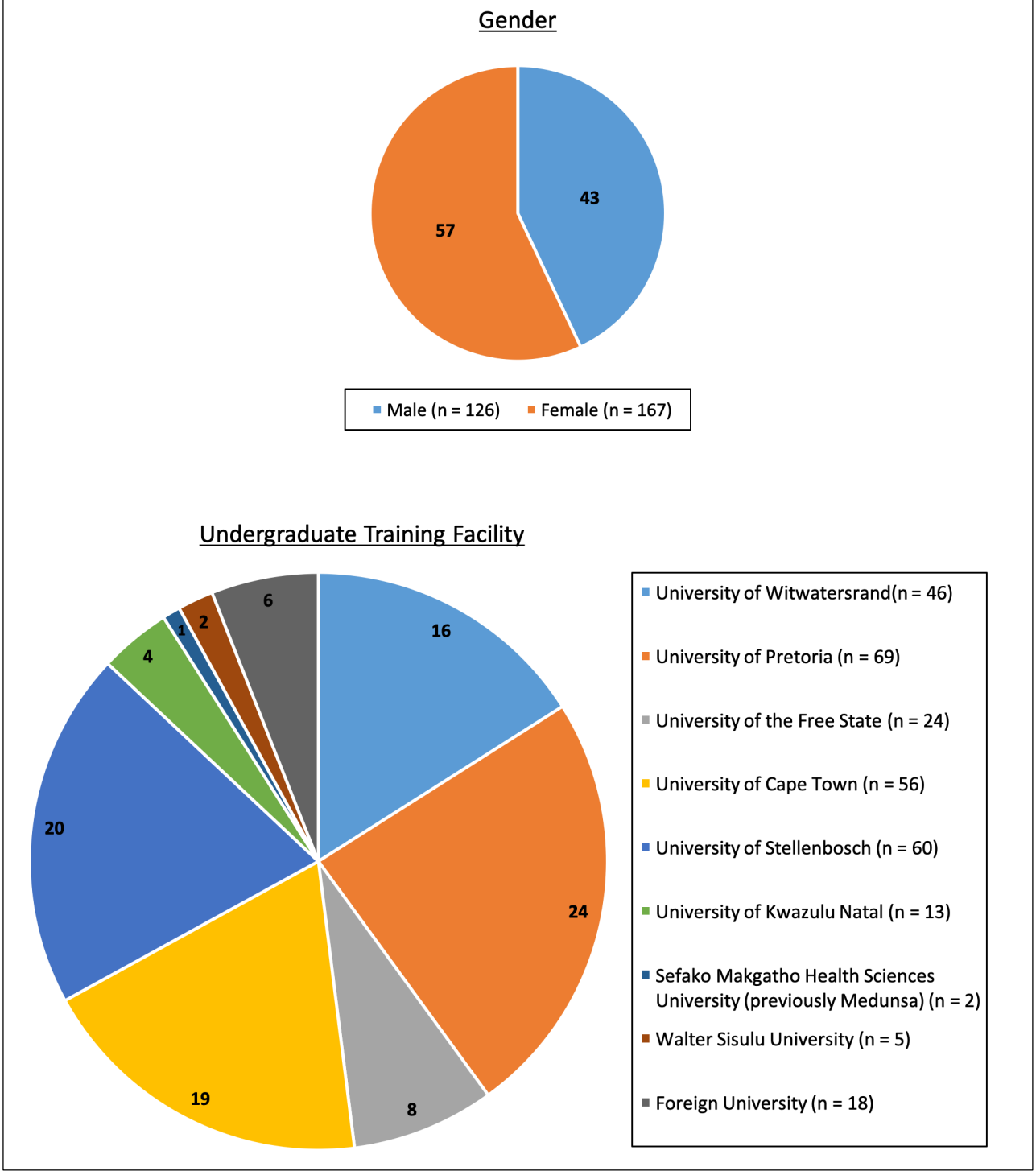
A total of 526 graduates were identified between 2012-2017. 293 graduates consented to participate in the study. A 56% response rate was achieved. The sample represented well the individual graduation years, ranging from 5 to 29 percent (Graph 1).

Graph 1: Number of Survey Respondents (including % of total) versus Nonrespondents by Year of DipPEC Graduation



The gender distribution amongst male and female respondents was 43% and 57%, respectively (Figure 1). The vast majority of participants fell between the ages of 25-35 with 136 (47%) aged 25-30 and 124 (42%) aged 31-35.

Figure 1: Percentage Demographics of DipPEC Survey Respondents; including Undergraduate University



All South African medical schools except the University of Limpopo were represented, with the Universities of Pretoria (69), Stellenbosch (60), Cape Town (56) and the Witwatersrand (46) having the most number of respondents, and the Universities of the Free State (24), Kwazulu Natal (13), Walter Sisulu University (5) and Sefako Makgatho Health Sciences University (2) having the least. Eighteen (18) graduates had completed their undergraduate training abroad with 11 of these doing so in Africa (principally Malawi) and the remainder in the UK (3), Seychelles (1), Turkey (1), Belgium (1) and Cuba (1) (Figure 1).

55% of participants obtained this qualification within 2 years of completing their internship, 26% between 1 and 5 years post community service and the remainder from 5 years onwards. In terms of locations for internship and community service, these were widespread across all the 9 provinces of South Africa.

Of the participants, 40% succeeded in obtaining the DipPEC in the 1st semester of the year, versus 60% who were successful in the 2nd semester.

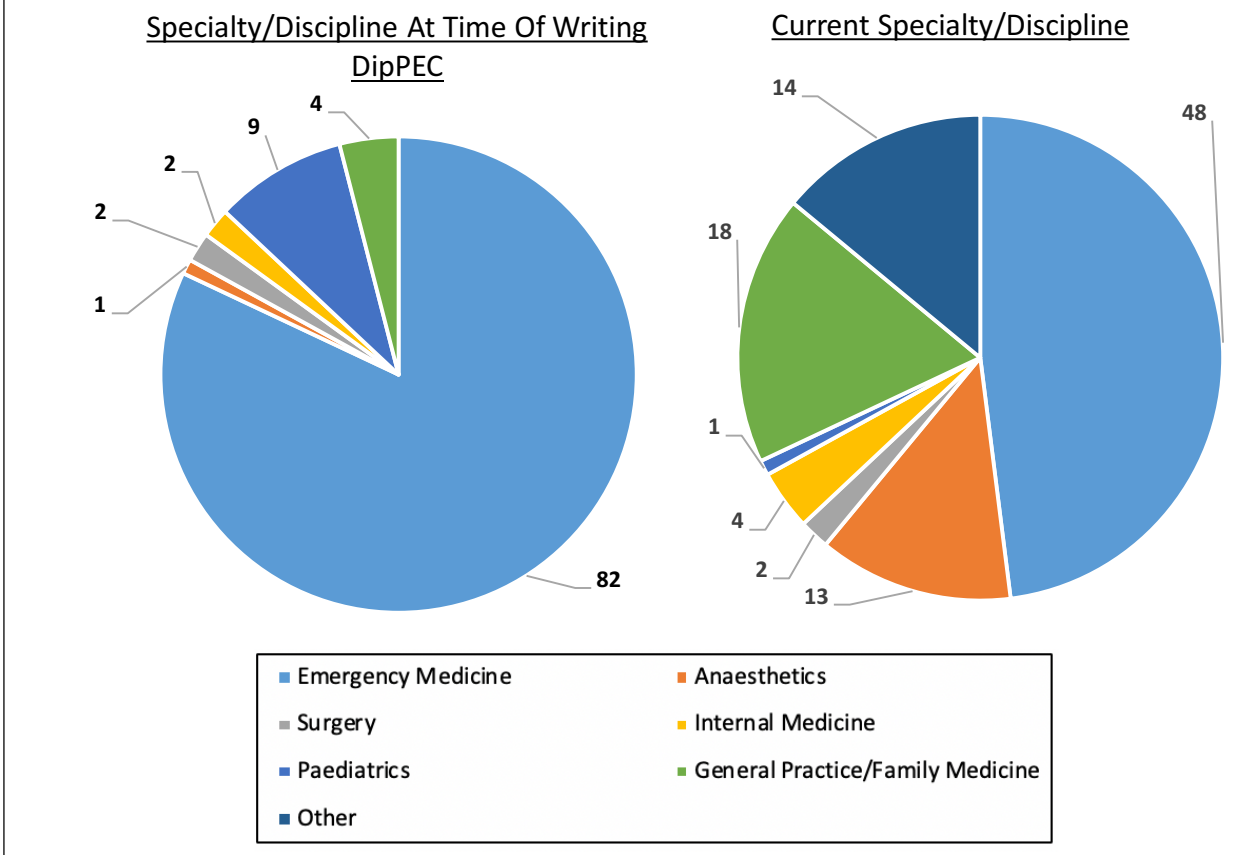
At the time of writing the DipPEC, the majority of graduates were practising domestically with 74% working in the public sector, 21% in the private sector, 5% in both and 1 graduate was unemployed. Geographically, 119 were working in the Western Cape, 77 in Gauteng, 30 each in Kwazulu Natal and the Northern Cape, 11 in Mpumalanga, 9 in the Eastern Cape, 5 in the Northwest Province, 3 in the Free State, and 1 in Limpopo. The remaining 8 graduates were practising abroad, with 3 on cruise ships and 5 working in other countries.

Of the study participants, 82% were working in the field of EM when they wrote the DipPEC; A smaller number (9%) were employed in a family medicine capacity with the remaining minority divided amongst various other disciplines (Figure 2). Of the graduates, 66% were working with an EM physician prior to the examination.

Currently, the majority of graduates (165 or 56 %) work in the public health care sector with 80 (27%) working in the private health care sector, 25 (9%) working in both, and 8% working abroad. Regarding this last statistic, 15 out of 23 graduates now work on cruise ships and the remaining 8 are divided amongst the USA, Canada and Ireland.

In terms of their current field of discipline, 79% are currently practicing in EM related fields, with 141 (48%) involved in Emergency Medicine itself, and the next two highest tiers practising in the fields of anaesthetics (13%) and family practice (18%) (Figure 2).

Figure 2: Field of practice at time of writing DipPEC versus current field of practice (%)



The remainder are divided across almost all fields of medicine (paediatrics, radiology, anatomical pathology, surgery, ophthalmology, critical care, ENT, etc.). In terms of current rank, 221 are medical officers, 52 are registrars, 11 are specialists and of those remaining, 8 work on cruise ships and 1 is involved in hospital management.

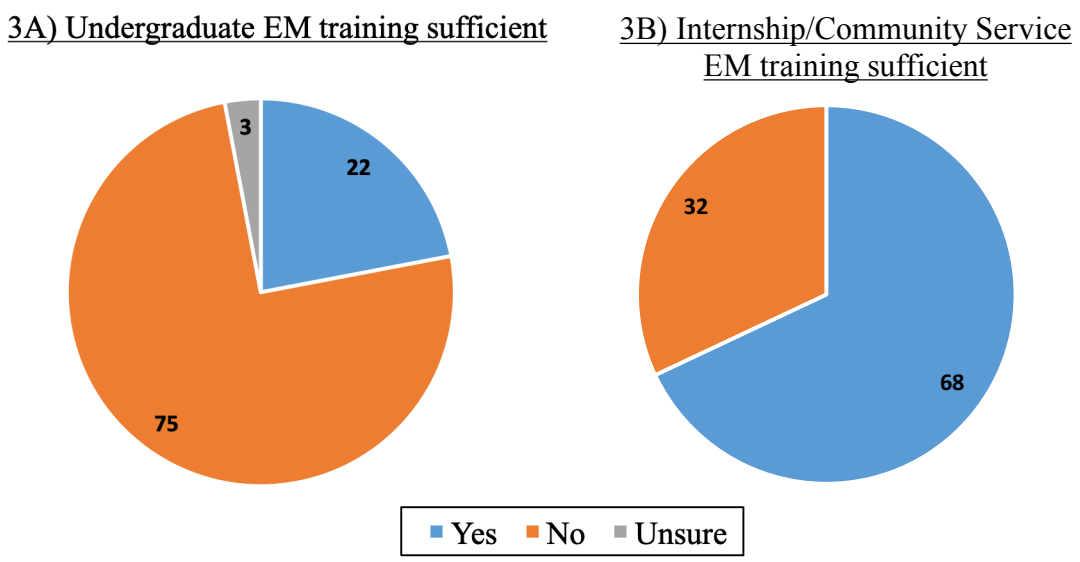
In terms of advanced medical courses completed prior to completing the DipPEC, 91% had completed ACLS, 70% ATLS, 75% had collectively completed PALS and/or APLS. Other courses included AMLS, ACLS EP, ICU, burns, ventilation and ECG courses.

In terms of the three routes available to qualify to write the examination, 80% spent 6 months in an EC during their community service year, 9% utilised a portfolio of learning and 11% used

their 2 years of internship and an 2 additional months supervised in an accredited emergency department. 88% felt that the training requirements for the DipPEC are sufficient.

The primary reason for writing the DipPEC, noted by 72% of study participants, was to increase their EM knowledge. 75% stated that their undergraduate training did not prepare them adequately to treat urgent or emergent patients (Figure 3A); as well as noting some dissatisfaction with their internship and community service (Figure 3B).

Figure 3: Percentage of DipPEC graduates who felt their EM training was sufficient at: **(A)** an undergraduate level; and **(B)** during their internship/community service



Other primary reasons included: to obtain a further qualification (53%); in preparation for a future career in EM (41%), and to travel and work abroad (19%). 3% stated monetary gain as a reason.

When asked to explain these reasons, common answers mirrored these selections with the vast majority noting inadequate prior training at an undergraduate as well as internship and community service level with significant 'gaps' in their EM knowledge. These graduates all stated the need to improve their skills and knowledge to not only improve their own confidence, but patient care.

Subsequent to obtaining the DipPEC, 34 participants(12%) had completed FCEM Part one and 4 had completed FCEM Part two. This closely relates to the primary reason selected by 41% of graduates for sitting the DipPEC, namely 'pursuing a future career in EM' with the DipPEC

stated as being advantageous in this regard. Graduates completed similar advanced medical short courses since obtaining the DipPEC, when compared to prior to sitting the examination, but in less numbers: ACLS 25%, ATLS 17%, PALS and APLS collectively 36%. 57% had completed other courses – these included a wide variety but those commonly listed were emergency ultrasound level one, the Diploma in Anaesthetics (DA) and examinations related to other specialties.

In terms of future careers in EM, many regarded having the DipPEC as a competitive advantage in order to enter an EM registrar training program, whilst some simply noted the qualification improved their future employment prospects. Of the 19% that wished to use their DipPEC to work abroad, most of these graduates stated it as a prerequisite to work onboard cruise ships.

Since obtaining the DipPEC, 89% confirmed an improvement in the patient care they provided, as well as an increase in their knowledge and confidence. Career progression was noted by 62% of the DipPEC graduates, with 20% stating a financial benefit. A larger number of graduates (36%) noted that the DipPEC had increased their ability to work abroad, when compared to the number of graduates that selected this as a primary reason to sit the examination in the first place (19%).

Of the study population, an overwhelming majority (91%) stated they would recommend the DipPEC. Common reasons for promoting the DipPEC included:

- The lack of undergraduate preparation in managing emergencies.
- To gain further confidence when managing a wide spectrum of patients.
- To improve overall patient care and safety, regardless of medical field.
- To improve EM skills and core knowledge.
- To improve employment prospects – this last reason was commonly stated together with comments such as ‘regardless of your chosen medical field’ or ‘even if you don’t choose to specialise’.

Recommendations for improving the diploma were fairly diverse and included: access to more teaching material in general and particularly for those practicing rurally (e.g. online material; mock exams) as well as additional recommended texts or websites; increasing the level of required short courses to enable one to sit the examination as opposed to the current

requirement of basic life support alone; extending the requirement of 2 additional supervised months post internship (e.g. to 6 months); making the syllabus less broad; and making the overall examination more challenging.

DISCUSSION

The DipPEC has increased in popularity since its inception in 1986[5]. Our study indicates a steady and significant increase in the number of graduates from 2012-2017, and this has been sustained since our study's implementation with a record number achieved in 2018 of 138 graduates.[6]

The domestic interest in this field, and the continued growth of this discipline in SA, corresponds to many other countries who too have recognised the pivotal role EM plays and who continue to develop their own capacities to respond to acute illness and injury.[2,8]

South Africa's tremendous disease burden augmented by the high levels of unemployment; the inequalities between public and private sector resource allocation when compared to patient demand; and the exposure to the spectrum of medical, trauma-related and paediatric emergencies compounded by the high prevalence of the synergistic diseases of HIV and tuberculosis; make the need for effective emergency medical care in all health care sectors paramount.

The DipPEC is a qualification that is viewed as highly beneficial in this regard, and unsurprisingly comes highly recommended by past graduates practising medicine at various levels, in various locations and even in different disciplines.

However, there appears to be an overt dissatisfaction by many health professionals with the EM training they received at an undergraduate and junior doctor level, regardless of where these were completed, with an associated lack of confidence and feeling ill-equipped to manage emergent patients. It appears that the EM knowledge deficit is the main driver for individuals wishing to obtain the DipPEC.

This improvement in skills, knowledge and confidence echoes the primary aim of the DipPEC as promoted by the CMSA, but it stands to reason that preparation for, as well as the obtaining the qualification itself, should augment basic foundations formed as students and junior doctors

– as opposed to forming the foundation itself. This would suggest that EM training at a junior doctor and undergraduate level is critical for South African Health care providers.

This study reviewed 293 DipPEC graduates, covering a wide range of backgrounds The spectrums of age, year the diploma was obtained, current and past discipline, rank, university, and facilities employed as junior doctors (intern and/or community service doctor) were wide and we feel that this is representative of the general DipPEC graduate population.

A significant number of participants elected to pursue future careers in EM both domestically and abroad. Many candidates recognised the DipPEC as a useful addition to their curriculum vitae for further post-graduate training applications in SA, and many have sat the EM primary examination, whilst some have graduated as consultants in this fairly new specialty.

Of respondents, 92% were working in South Africa. Regarding employment abroad however, many graduates noted the DipPEC as a distinct advantage in obtaining work onboard cruise ships. It could be postulated that since obtaining the DipPEC, graduates have considered immigration more closely. Moreover, there was an increased number of doctors working outside of SA since obtaining the DipPEC (8%) – primarily on cruise ships – when compared to the number of doctors at the time of writing the examination (1%). It was not asked in our study, whether the DipPEC graduates currently working outside of SA plan to return.

A recent study in 2015, noted that the percentage of physicians and other HCWs seeking migration information from professional sources, recruitment agencies and personal contacts is significant.[11] More importantly, the percentage of physicians in the same study 'very likely' to migrate from SA by 2020 was also high. Concerningly, when the numbers of those who responded 'somewhat likely' are added to this figure, it indicates more than half of all South African doctors participating in that study may have sought work abroad by that time (~208 generalists; ~324 specialists).

It is clear that South African EM continues to grow and be recognised both locally and internationally. However, these local EM physicians need to be nurtured and efforts should be made to address so-called 'push' or 'pull' factors influencing the country's healthcare worker brain drain. While exposing oneself as a doctor to foreign medical practices and further training should not be discouraged, doctors should be encouraged to do so for a finite period of time -

retention of skilled physicians in a country with high disease burdens and already fragile health care systems is crucial.

The DipPEC's wide syllabus, including approaches to emergencies pertaining to *all* fields of medicine, together with the common sentiment noted that this qualification is highly recommended *regardless* of one's chosen field, may well explain its increasing popularity as a postgraduate degree.

Suggestions by the study participants in terms of adjustments to eligibility criteria, availability of additional study resources and guidance; and components of the examination itself will be forwarded to the CMSA for consideration.

LIMITATIONS

The contact emails for past graduates who failed to respond may have changed since they obtained the qualification. Furthermore, an element of selection bias may have existed with those graduates that did participate as they may value the College of Emergency Medicine of South Africa more than those who failed to do so.

CONCLUSION

The unique, interrelated challenges faced in the SA healthcare system need competent, knowledgeable health practitioners at the 'coalface' to deliver proficient, evidence-based emergency care. Participants expressed concern regarding the EM knowledge and confidence delivered by their undergraduate and junior doctor training. The increasingly popular DipPEC, is a qualification that serves to provide such knowledge and skills, and aims to augment EM training and deliver better emergency care to patients.

The DipPEC examination is sat by mostly junior health professionals for a variety of reasons, primarily of which include improving their own EM knowledge; in order to pursue a career in EM with or without formal specialisation; and perhaps increasingly, to work abroad. These physicians need to be 'nurtured' and supported in order to maintain the quota of future health professionals armed with advanced EM training in SA.

APPENDICES

APPENDIX 1: Survey Distributed to DipPEC graduates

Welcome to the Anonymous DipPEC survey

You are invited to complete the Anonymous DipPEC survey. This forms part of the research project entitled: *The Diploma in Primary Emergency Care: A description of its graduates & their motivation over the last 6 years*

This project is conducted by Dr David Cloete as part of his MMED in Emergency Medicine at the University of Stellenbosch. It will take approximately 5-10 minutes to complete.

Participation:

Participation is voluntary. This means you may choose not to participate. If you do participate, you may decline to answer any of the questions at a later stage.You will not be penalised in any way for making any of the above mentioned choices.

Please note that your participation, as well as the answers you provide regarding you as a health professional and your DipPEC qualification, are entirely anonymous. No contact details will be shared, and data security will be maintained at all times.

Risks:

No overt risk were foreseen during the design of the survey. If any negative experience should be encountered, please contact the researchers immediately.

Benefits:

Your response to the survey will benefit the CMSA and College of Emergency Medicine of South Africa: This survey aims to guide further DipPEC examinations and indirectly improve the quality of this examination. More specifically: understanding of candidates' motivation and use of the diploma, may be used to realign the stated aims and objectives of the qualification and project future candidate numbers.

Survey Questions

1. **Electronic Consent:**
Please select your choice below.

Clicking on the "Agree" button indicates that:

- You have read and understood the information within this form.
- You voluntarily agree to participate in this research project, by completing the online survey.

- ◯ Agree
- ◯ Disagree

2. What is your age group?

- ◯ 25-30
- ◯ 31-35
- ◯ 36-40
- ◯ 41-45
- ◯ 46-50

3. What is your gender?

- ☐ Male
- ☐ Female

4. Where did you complete your undergraduate training?

- ◯ University of the Witwatersrand.
- ◯ University of Pretoria.
- ◯ University of the Free State.
- ◯ University of Cape Town.
- ◯ University of Stellenbosch.
- ◯ University of Kwazulu Natal.
- ◯ Sefako Makgatho Health Sciences University (previously MEDUNSA).
- ◯ Walter Sisulu University.
- ◯ University of Limpopo.
- ◯ Other University. If so, please specify:

5. Do you feel your undergraduate training prepared you adequately to treat urgent/emergent patients?

- ◯ Yes.
- ◯ No.
- ◯ I don't know.

6. What health care sector do you work in CURRENTLY?

- ◯ Public health care sector
- ◯ Private health care sector
- ◯ Both
- ◯ Neither. If so, please specify:

7. What is your CURRENT field of practice/current discipline?

- ◯ Emergency Medicine
- ◯ Anaesthetics
- ◯ Surgery
- ◯ Other, if so please specify
- ◯ Internal Medicine
- ◯ Paediatrics
- ◯ General Practice/Family Medicine

8. What IS your CURRENT rank/level?

- ◯ Community service officer
- ◯ Medical officer <1 year
- ◯ Medical officer 1-2 years
- ◯ Medical officer 2-5 years
- ◯ Medical officer >5 years
- ◯ Other (please specify)
- ◯ General Practitioner
- ◯ Full time emergency medicine doctor (private sector; not specialised)
- ◯ Registrar
- ◯ Specialist

9. What route did you use to qualify to write the DipPEC?

- ◯ Portfolio of learning.
- ◯ 2 years of internship plus 2 months in an emergency centre.
- ◯ Community service with 6 months in an emergency centre.

10. In what year did you obtain the DipPEC?

- ◯ 2012
- ◯ 2013
- ◯ 2014
- ◯ 2015
- ◯ 2016
- ◯ 2017

11. Did you obtain the DipPEC in the 1st semester or 2nd semester of that year?

- ◯ 1st Semester
- ◯ 2nd Semester

12. What health sector DID you work in when you wrote the DipPEC?

- ◯ Public health care sector
- ◯ Private health care sector
- ◯ Both
- ◯ Neither. If so please specify:

13. What WAS your rank/level when you wrote the DipPEC?

- ◯ Community service officer
- ◯ Medical officer <1 year
- ◯ Medical officer 1-2 years
- ◯ Medical officer 2-5 years
- ◯ Medical officer > 5 years
- ◯ General Practitioner
- ◯ Full time emergency medicine doctor (Not specialised)
- ◯ Registrar
- ◯ Specialist

14. What WAS your field of practice/discipline when you wrote the DipPEC?

- ○ Emergency Medicine
- ○ Anaesthetics
- ○ Surgery
- ○ Other, if so please specify
- ○ Internal Medicine
- ○ Paediatrics
- ○ General Practice/Family Medicine

15. In what province were you working/training whilst studying towards the DipPEC?

- ○ Gauteng
- ○ Kwazulu-Natal
- ○ Free State
- ○ Limpopo
- ○ Mpumalanga
- ○ Other (please specify; e.g. South African working overseas OR foreign graduate)
- ○ North West
- ○ Eastern Cape
- ○ Western Cape
- ○ Northern Cape

16. What was your PRIMARY reason(s) for writing the DipPEC?

- ☐ To obtain a further qualification.
- ☐ Peer pressure.
- ☐ To increase emergency medicine knowledge.
- ☐ Other reason(s). If so, please specify:
- ☐ In preparation for a future/ongoing career in Emergency Medicine.
- ☐ Travel and work abroad.
- ☐ Unsure.

17. Please briefly explain your answer to Question 16.

18. Has your DipPEC added value to you in any of the following areas: (please tick all applicable)

- [ ] Career Progression?
- [ ] Patient Care?
- [ ] Financially?
- [ ] Ability to travel/work abroad?
- [ ] Other (please specify)

19. Where did you complete your internship?

20. Where did you complete your community service?

21. Do you think your internship/community service prepared you adequately for treating urgent/emergent patients?

- ( ) Yes.
- ( ) No.

22. Did you receive specific DipPEC/emergency medicine training at your facility prior to writing the DipPEC?

- ( ) Yes.
- ( ) No.

23. Did you work with a DipPEC physician prior to writing the exam?

- ( ) Yes.
- ( ) No.
- ( ) Unsure.

24. Would you recommend the DipPEC? Please provide a reason(s) for your answer.

25. What other advanced medical courses did you complete PRIOR to writing the DipPEC?

- [ ] ACLS
- [ ] APLS
- [ ] ACLS EP
- [ ] ATLS
- [ ] PALS
- [ ] AMLS
- [ ] Other (please specify)

26. Do you think the training/entrance requirements for the DipPEC are sufficient?

- ( ) Yes.
- ( ) No, the training requirements should be *longer*.
- ( ) No, the training requirements should be *shorter*.

27. Do you have any recommendations as to how to improve the DipPEC?

- ( ) No.
- ( ) Yes.

Please comment on your answer.

28. What other advanced medical courses have you completed SINCE you obtained the DipPEC?

- [ ] ACLS
- [ ] ATLS
- [ ] ACLS EP
- [ ] AMLS
- [ ] PALS
- [ ] FCEM Part One
- [ ] APLS
- [ ] FCEM Part Two
- [ ] Other (please specify)

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Part D: Supporting Documentation

Ethics Approval

UNIVERSITEIT
STELLENBOSCH
UNIVERSITY

Health Research Ethics Committee (HREC)

Approval Notice

New Application

28/05/2018

Project ID :6627

HREC Reference #: S18/03/058

Title: The Diploma in Primary Emergency Care: A description of its graduates & their motivation over the last 6 years

Dear Dr David Cloete,

The **Response to Modifications** received on 16/05/2018 09:54 was reviewed by members of **Health Research Ethics Committee 2 (HREC2)** via **expedited** review procedures on 28/05/2018 and was approved.

Please note the following information about your approved research protocol:

Protocol Approval Period: **This project has approval for 12 months from the date of this letter.**

Please remember to use your **Project ID [6627]** on any documents or correspondence with the HREC concerning your research protocol.

Please note that the HREC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

After Ethical Review

Please note you can submit your progress report through the online ethics application process, available at: Links Application Form Direct Link and the application should be submitted to the HREC before the year has expired. Please see *Forms and Instructions* on our HREC website (www.sun.ac.za/healthresearchethics) for guidance on how to submit a progress report.

The HREC will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly for an external audit.

Provincial and City of Cape Town Approval

Please note that for research at a primary or secondary healthcare facility, permission must still be obtained from the relevant authorities (Western Cape Departement of Health and/or City Health) to conduct the research as stated in the protocol. Please consult the Western Cape Government website for access to the online Health Research Approval Process, see: https://www.westerncape.gov.za/general-publication/health-research-approval-process. Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

We wish you the best as you conduct your research.

For standard HREC forms and instructions, please visit: Forms and Instructions on our HREC website https://applyethics.sun.ac.za/ProjectView/Index/6627

If you have any questions or need further assistance, please contact the HREC office at 021 938 9677.

Yours sincerely,

Francis Masiye ,

HREC Coordinator,

Health Research Ethics Committee 2 (HREC2).

National Health Research Ethics Council (NHREC) Registration Number:

REC-130408-012 (HREC1)·REC-230208-010 (HREC2)

Federal Wide Assurance Number: 00001372